

READ ME

NYS IPM staff have carefully researched and vetted the information contained in this presentation to ensure that it is as current and accurate as possible. Much of this information can be found in greater detail at www.dontgettickedy.org.

If you find additional tick-related information you believe should be added, we would be happy to review the new information. Please contact nysipm@cornell.edu.

Please note that information about tick-borne diseases is restricted to what pathogens are carried by what tick species and how they are transmitted. It is beyond the scope of our roles as CCE Educators to discuss diagnosis, symptoms, and treatment. Our responsibility ends with what information attendees can provide their physicians if they find an embedded tick.

Check out the Notes section on each slide for further information and possible discussion questions.

www.nysipm.cornell.edu



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Cornell Cooperative Extension
provides equal program and
employment opportunity.



Don't Get Ticked New York Campaign

• Campaign Objectives

- Reduce human exposure to tick-borne illnesses.
- Promote IPM, including monitoring and personal protection, as best management practices for avoiding ticks and tick-borne disease.
- Make tick avoidance easy to understand and accomplish



Funded by the NYS
Senate Task Force on
Lyme and Tick-Borne
Diseases



Ticks Avoiding the bite

Your Name Here
Your Organization Here

www.nysipm.cornell.edu



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Topics of the day

• Know your pest

- Ticks
- Disease
- Hosts

• Prevention through IPM

• Proper removal of embedded ticks



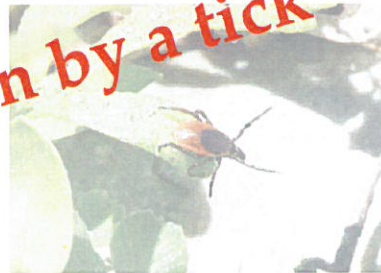
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- Know your pest
 - Ticks
 - Disease
 - Hosts
- Prevention through IPM
- Proper removal of embedded ticks

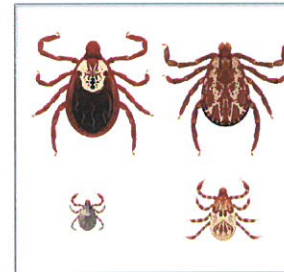
Don't get bitten by a tick



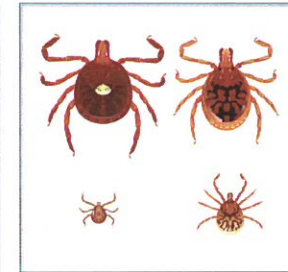
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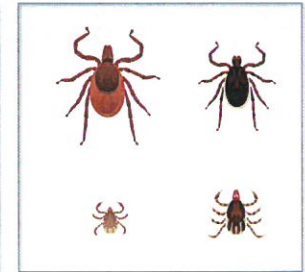
Not All Ticks are a Human Health Threat – In NY, these are:



American Dog Tick



Lone-Star Tick



Blacklegged Tick
aka Deer Tick

Ticks - Basic Biology



Haemaphysalis longicornis Asian longhorned tick



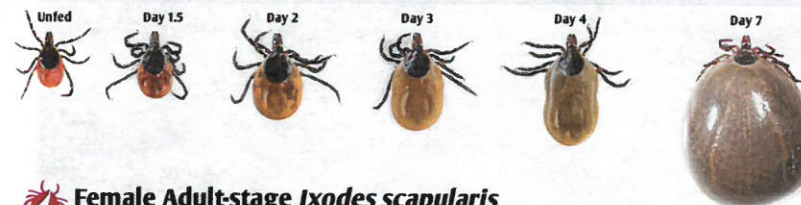
Photo: Jim Occi

Ticks are blood feeding ectoparasites

- Most ambush with questing behavior
- Quest from 0 to 1.5 feet on foliage
- Do not jump, fly, or drop from trees
- Lone star ticks are more active hunters



Ticks are committed



 Female Adult-stage *Ixodes scapularis*
Growth Comparison

 University of Rhode Island
TickEncounter Resource Center

www.tickencounter.org

Ticks are small



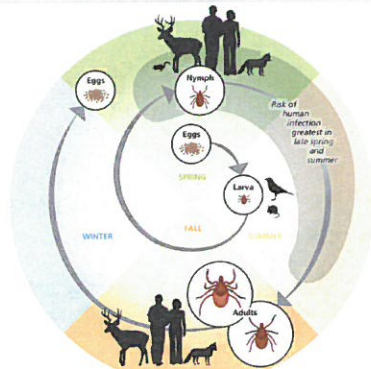
Photo: California Department of Public Health

Ticks are committed – to a point



Photo: Gary Alpert, Harvard University, Bugwood.org

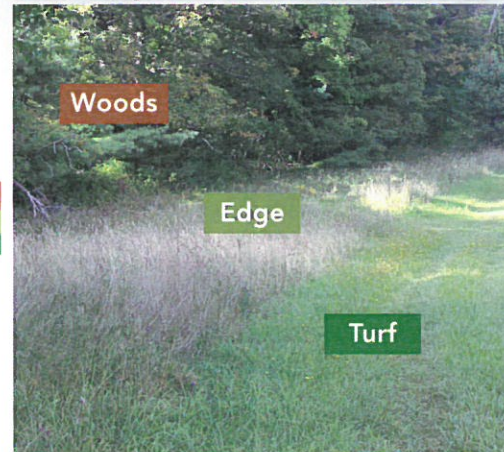
Ticks are long-lived



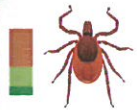
<https://www.cdc.gov/lyme/resources/brochure/lymediseasebrochure.pdf>



Ticks have preferred habitats



Blacklegged tick

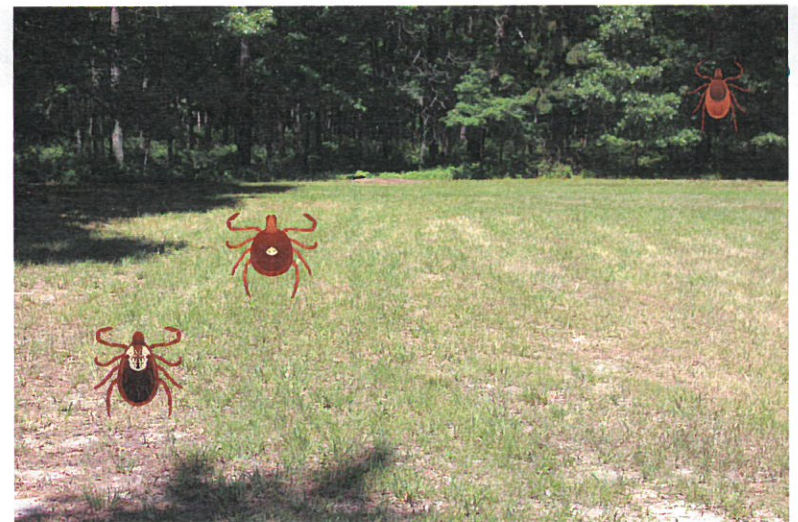
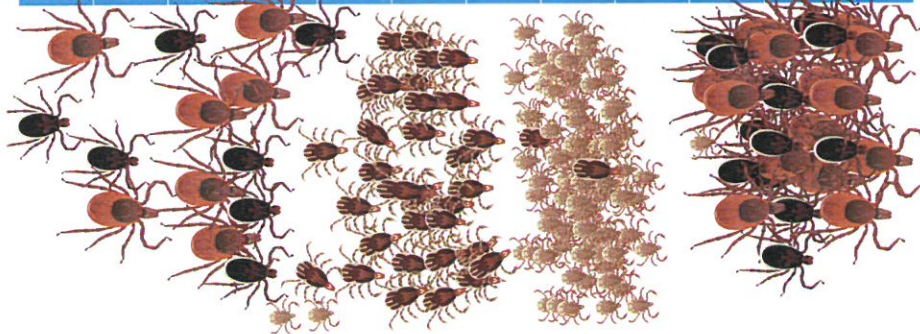


American dog tick

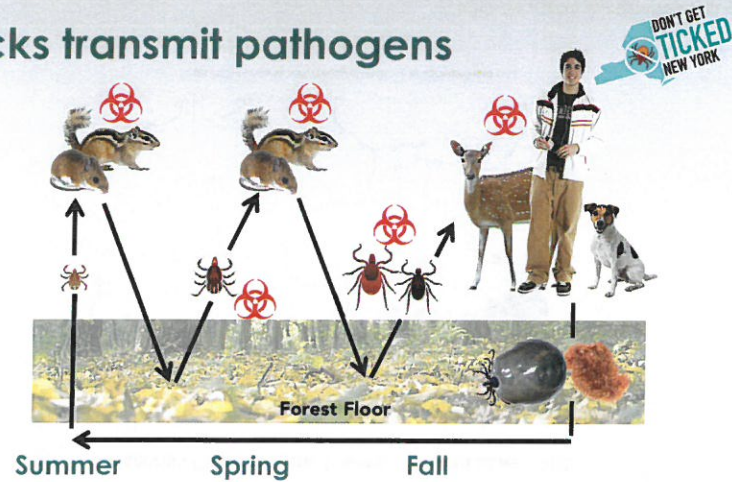


Ticks are seasonal (sort of)

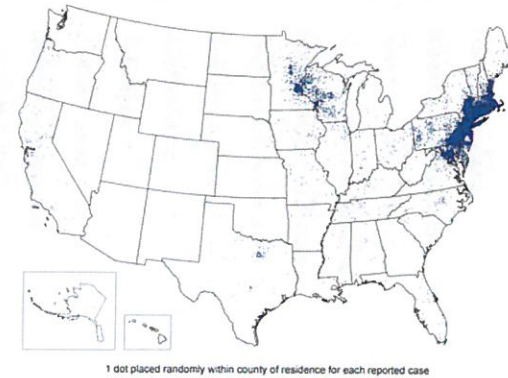
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC



Ticks transmit pathogens



Reported Cases of Lyme Disease -- United States, 2001

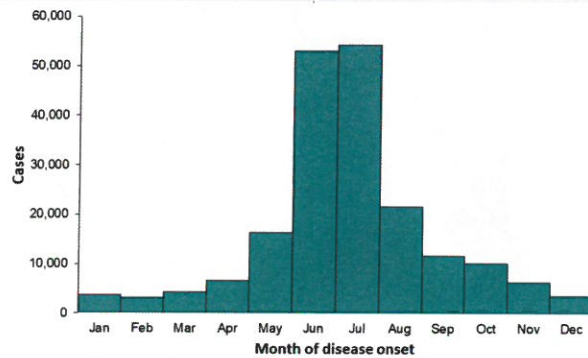


1 dot placed randomly within county of residence for each reported case

<https://www.cdc.gov/lyme/stats/maps.html>

Lyme disease

Confirmed cases of disease onset 2001-2017



<https://www.cdc.gov/lyme/stats/graphs.html>

Reported Cases of Lyme Disease -- United States, 2006



1 dot placed randomly within county of residence for each reported case

<https://www.cdc.gov/lyme/stats/maps.html>

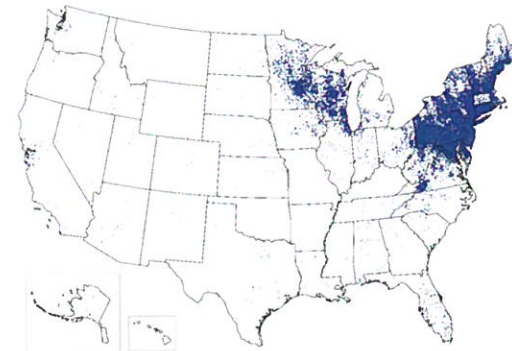
Reported Cases of Lyme Disease -- United States, 2011



1 dot placed randomly within county of residence for each confirmed case

<https://www.cdc.gov/lyme/stats/maps.html>

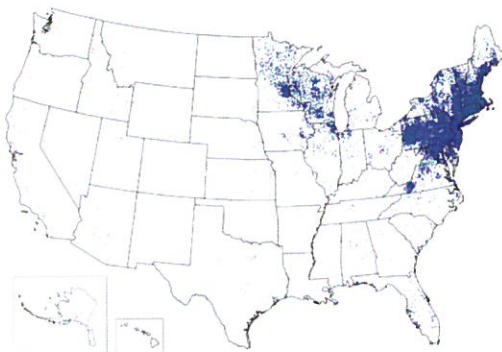
Reported Cases of Lyme Disease -- United States, 2017



1 dot placed randomly within county of residence for each confirmed case

<https://www.cdc.gov/lyme/stats/maps.html>

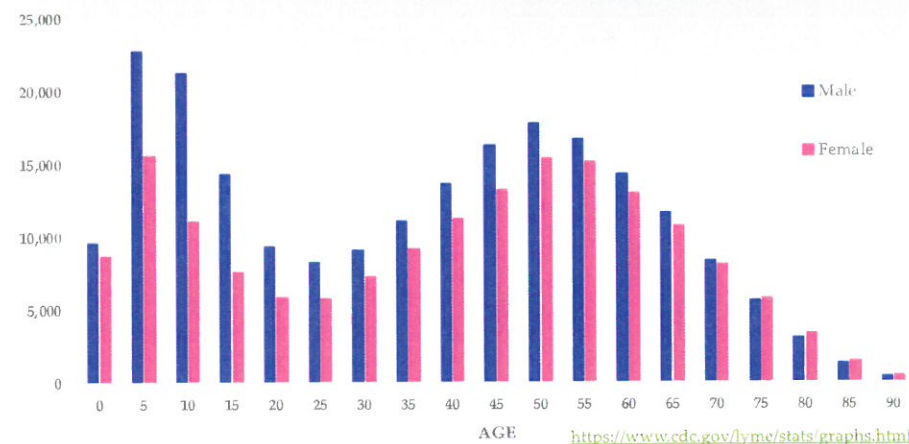
Reported Cases of Lyme Disease -- United States, 2014



1 dot placed randomly within county of residence for each confirmed case

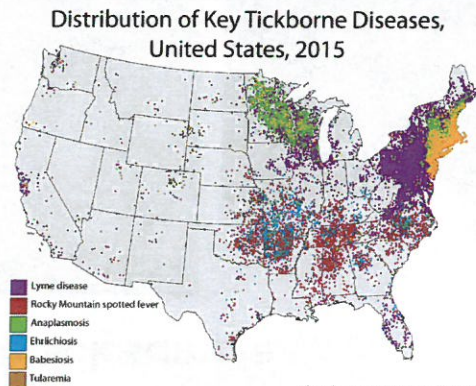
<https://www.cdc.gov/lyme/stats/maps.html>

Confirmed Lyme Disease Cases
2001 - 2017



<https://www.cdc.gov/lyme/stats/graphs.html>

Multiple Tick-Borne Diseases



CDC: Centers for Disease Control and Prevention

Ticks need hosts



Photo: Mark Beckemeyer flickr

Photo: www.inaturalist.org 104653

Tick-Borne Diseases

- Lyme Disease
- Anaplasmosis
- Babesiosis
- Powassan Virus
- *Borrelia miyamotoi*

Blacklegged Tick



- Non-pathogen Impact
 - Tick paralysis

- Ehrlichiosis
- Southern Tick Associated Rash Illness (STARI)
- Canine ehrlichiosis
- Tularemia
- Rocky Mountain Spotted Fever

Lone-Star Tick



- Tick Bite-Induced Allergy (alpha-gal allergy)

American Dog Tick



White-footed Mouse – *Peromyscus* sp.

- Present in forest fragments and suburbs
- >90% can be infected with the Lyme Disease pathogen
- ~50% can be infected with 3 pathogens



Photo: Jesse Brunner

White-tailed Deer

- Host for about 90% of adult blacklegged ticks
- Every year, each deer can account for .5 million ticks
- Long distance dispersal of ticks
- Dead-end host for Lyme Disease



Photo: Peter Priolo

A very quick sample



- 51% Lyme
- 2% Anaplasmosis
- 11% *Borrelia miyamotoi*
- 21% Babesiosis
- 23% more than 1 disease

A very quick sample



Deer Tick Surveillance: Adults (Oct to Dec) Suffolk County (disease as average %: 2014-2017)





Borrelia burgdorferi
Lyme
61

Anaplasma phagocytophilum
Anaplasmosis
18

Babesia microti
Babesiosis
18

Borrelia miyamotoi
Tick Relapsing Fever
3

Deer Tick Surveillance: Adults (Oct to Dec) Suffolk County (disease as average %: 2014-2017)

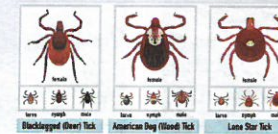
	<i>Borrelia burgdorferi</i> Lyme	<i>Anaplasma phagocytophilum</i> Anaplasmosis	<i>Babesia microti</i> Babesiosis	<i>Borrelia miyamotoi</i> Tick Relapsing Fever
	61	18	18	3
	32	6	21	3

New York State Department of Health

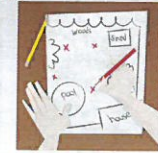
Integrated Pest Management



Inspection



Identification



Analysis & Planning



Management



Monitoring



Record Keeping

Thus ends the

Developing a Healthy Paranoia

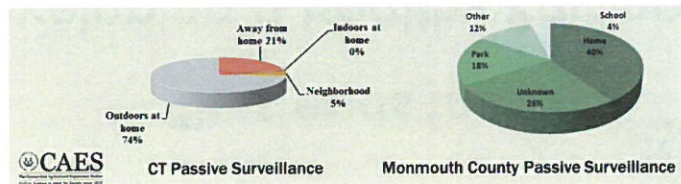
portion of our program



"My kid picked up a tick at school"

“My kid picked up a tick at school”

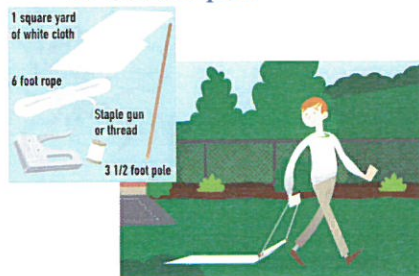
- Scenario 1 – kid picked up the tick at home or in the neighborhood
- Scenario 2 – kid picked up the tick on the way to school
- Scenario 3 – kid picked up the tick at school



Inspection – Tick Drag



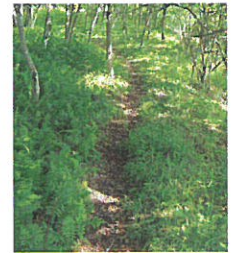
- Square yard (or meter) of white corduroy or flannel attached to wooden pole



Preventing tick bites



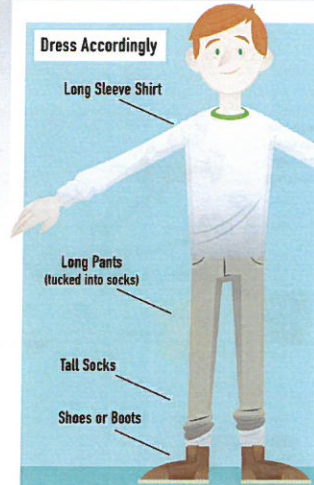
- When possible, avoid tick hot spots



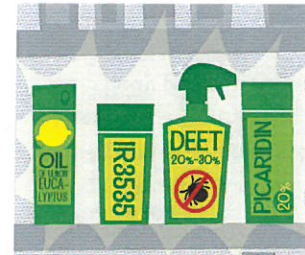
Preventing tick bites

• Dress safe when entering tick-infested areas...

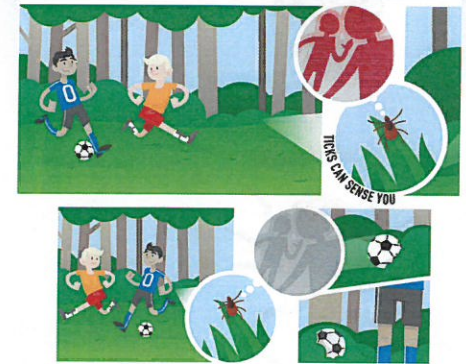
- Light-colored clothes
- Pants in socks
- Seal pant legs



Personal Protection - Repellents



FOLLOW ALL LABEL INSTRUCTIONS



Inspect Yourself



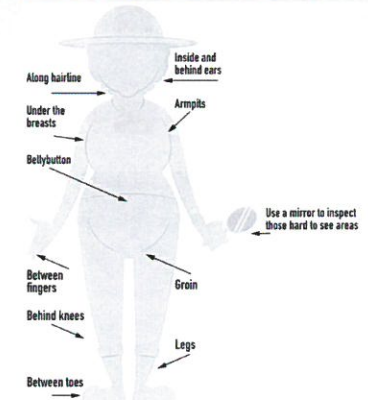
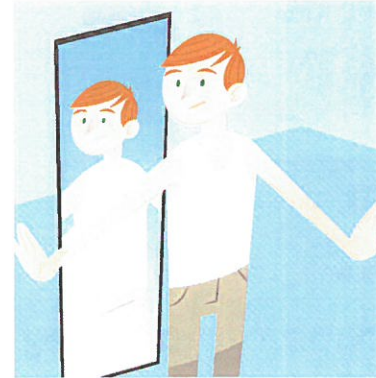
Personal Protection – Treated Clothes



Follow Label Directions

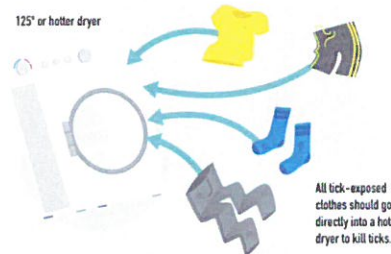


Inspection – Brush, floss, tick check!



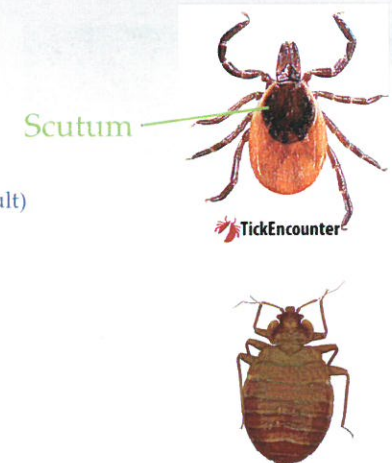
After Coming Inside

- Dry exposed clothing to kill ticks (lethal kill above 122°F)
- Shower to wash off crawling ticks and...

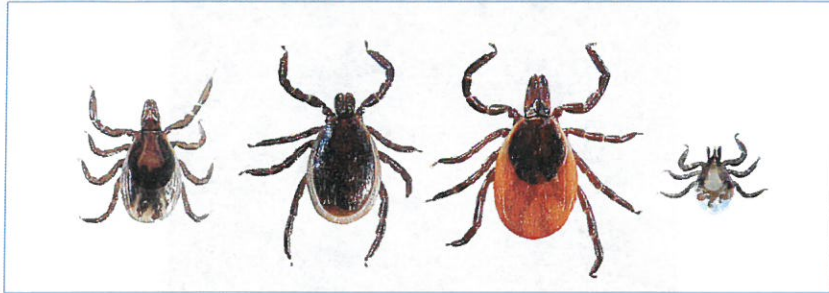


Identification

- Arachnids
 - 2 body parts
 - 4 pairs of legs (nymph and adult)
- Insects
 - 3 body parts
 - 3 pairs of legs



Identify the Blacklegged Tick (the only vector of Lyme)



TickEncounter Resource Center

www.tickencounter.org

Scutum patterns and mouthparts



blacklegged
Tick



Lone-Star
Tick



American
Dog Tick



TickEncounter Resource Center

www.tickencounter.org

Identify the Blacklegged Tick



TickEncounter Resource Center

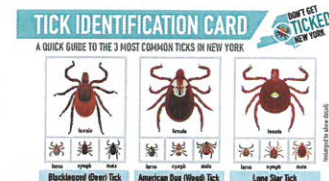
www.tickencounter.org

Identification Resources

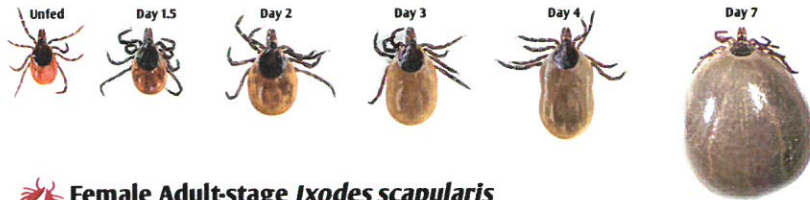


- Email a clear picture to: [jkz6@cornell.edu](mailto:j kz6@cornell.edu)
- Mail it to:
NYS IPM Program
Joellen Lampman
24 Martin Rd.
Voorheesville, NY 12186

ACTUAL TICK SIZE <small>larger when fed</small>			
	Black Legged	American Dog	Lone Star
larva			
nymph			
adult male			
adult female			



Tick check every day.
Missed one? You have days to find it.



 Female Adult-stage *Ixodes scapularis*
Growth Comparison

 University of Rhode Island **TickEncounter** Resource Center www.tickencounter.org



TickEncounter Resource Center
November 11 at 7:26am



What we're up against



Photo: Gary Alpert, Harvard University, Bugwood.org



Tick Removal

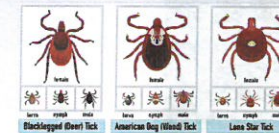




Integrated Pest Management



Inspection



Identification



Analysis & Planning



Management



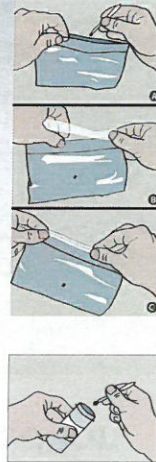
Monitoring



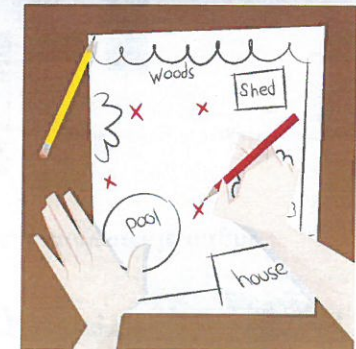
Record Keeping

Save the tick

- After removing the tick:
 - Put the date on a plastic bag
 - Place the tick in the bag
 - Stick it in the freezer
 - Alternatively, put it in a bottle filled with alcohol
- Different ticks carry different diseases and knowing what species bit you can help the doctor decide on the best course of treatment.
- If you start to feel poorly in the next few weeks, have the tick properly identified and provide the information to the doctor

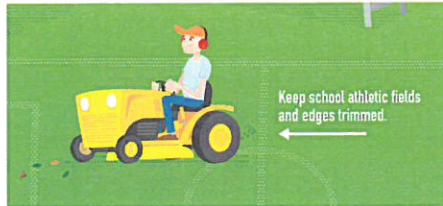


Analysis and Planning



Management - Habitat Modification

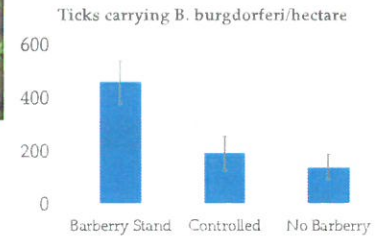
- Reduce tick habitat – dry it out!
 - Remove leaf litter
 - Trim trees and brush to allow more sunlight to the ground



Invasive Plant Management



- Japanese barberry, multiflora rose, honeysuckle might concentrate tick populations



Long-Term Effects of *Berberis thunbergii* Management on *Ixodes scapularis* Abundance and *Borrelia burgdorferi* Prevalence in Connecticut, USA

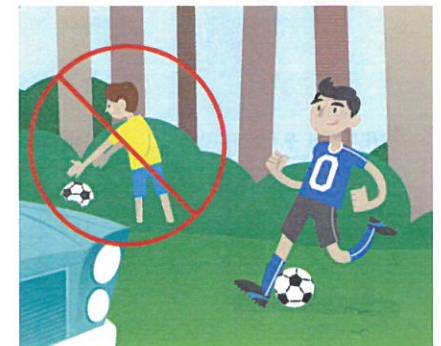
Habitat Modification

- Crushed stone and wood chip barriers
- Replace vegetation near buildings with hardscape
- Remove invasive species



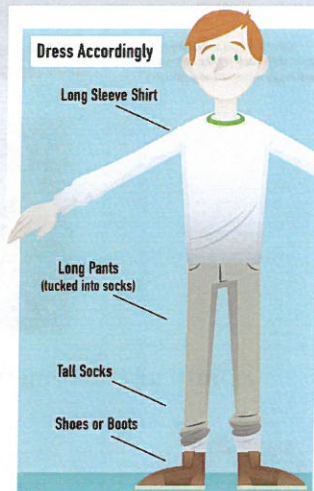
Review

- Avoid tick areas



Review

- Avoid tick areas
- Dress appropriately



Review

- Avoid tick areas
- Dress appropriately
- Repellents
- Continuously check self and friends



Review

- Avoid tick areas
- Dress appropriately
- Repellents



Review

- Avoid tick areas
- Dress appropriately
- Repellents
- Continuously check self and friends
- Conduct a thorough tick check EVERY DAY



DON'T GET
TICKED
NEW YORK

Review

- Avoid tick areas
- Dress appropriately
- Repellents
- Continuously check self and friends
- Conduct a thorough tick check EVERY DAY
- If an embedded tick is found, remove properly



www.dontgettickedny.org

DON'T GET TICKED NY

Ticks

Home / What's Bugging You? / Ticks

Ticks and tick-borne diseases have become a significant public health issue in New York, with different tick species and diseases currently present and spreading within the state and region.



More ticks in more places also increases your risk of tick encounters. Changes in land use such as construction of new neighborhoods and shopping centers leave small patches of wooded areas, and these are great habitats for deer and mice. More hosts means more ticks! In addition, a warming climate expands the areas and seasons where ticks actively feed.

Learn More

Definitions

- **Ectoparasite:** a parasite that lives on the outside of its host.
- **Parasite:** a living thing which feeds in or on another living thing.

NYSP Program Links

- Frequently Asked Questions About Ticks
- Tick Infographic Posters
- See Don't Get Ticked Sign Posts at Towns and
- See Don't Get Ticked Sign Posts at the Back of Schools and Childcare
- Pest Management
- NYSP Image Gallery - Ticks

Related Links

- ALERT! Longhorned tick found in NY - A vector Borne Disease
- Center Fact Sheet
- Governor Cuomo Announces Lyme and Tick-Borne Disease Control Plan
- Tick Buggy for the Homeowner - Cornell

The punchline...

- You do not want to be bitten by a tick. But you can protect yourself. Go outside!



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For more information, visit:

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